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Response Rates in Organizational Science, 1995-2008:

A Meta-analytic Review and Guidelines for Survey Researchers

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Abstract

Purpose - This study expands upon existing knowledge of response rates by conducting a large-scale quantitative review of published response rates. This allowed a fine-grained comparison of response rates across respondent groups. Other unique features of this study are the analysis of response enhancing techniques across respondent groups and response rate trends over time. To aid researchers in designing surveys, we provide expected response rate percentiles for different survey modalities.

Design – We analyzed 2037 surveys, covering 1,251,651 individual respondents, published in 12 journals in I/O Psychology, Management, and Marketing during the period 1995-2008. Expected response rate levels were summarized for different types of respondents and use of response enhancing techniques was coded for each study.

Findings – First, differences in mean response rate were found across respondent types with the lowest response rates reported for executive respondents and the highest for non-working respondents and non-managerial employees. Second, moderator analyses suggested that the effectiveness of response enhancing techniques was dependent on type of respondents. Evidence for differential prediction across respondent type was found for incentives, salience, identification numbers, sponsorship, and administration mode. When controlling for increased use of response enhancing techniques, a small decline in response rates over time was found.

Implications – Our findings suggest that existing guidelines for designing effective survey research may not always offer the most accurate information available. Survey researchers should be aware that they may obtain lower/higher response rates depending on the respondent type surveyed and that some response enhancing techniques may be less/more effective in specific samples.

Originality/value – This study, analyzing the largest set of published response rates to date, offers the first evidence for different response rates and differential functioning of response enhancing techniques across respondent types.

Key words: response rate, response enhancing technique, survey, respondent type, sample, meta-analysis

Response Rates in Organizational Science, 1995-2008: A Meta-analytic Review and Guidelines for Survey Researchers

Organizational researchers relying on survey methodology are often confronted with the potential threat of a substantial amount of non-response to a survey. Two important concerns arise when considering non-response. A first issue is which precautions researchers can take to increase response rates in their studies and which response rates they may expect in a particular research situation (Dillman, 2000; Roth & BeVier, 1998). A second issue refers to whether the observed non-response to the survey threatens the external validity of the conclusions drawn (Rogelberg & Stanton, 2007; Spitzmuller, Glenn, Barr, Rogelberg, & Daniel, 2006). If systematic differences between respondents and non-respondents are present, the findings of the study may not generalize to the entire sample, and hence, may undermine conclusions drawn about the population under consideration. The current study addresses the first issue. More than a decade ago, Roth and BeVier (1998) calculated response rates obtained in organizational surveys on the basis of an analysis of studies published in organizational journals for the years 1990 to 1994. Their study offered empirically based guidelines to aid organizational researchers and practitioners in predicting and evaluating response rates. In addition, their findings provided organizational researchers with information on techniques that might help enhance response rates.

Although this study has proved to be an important help to researchers, these initial findings are currently in need of extension. First, to date mostly general guidelines that summarize response rates over different types of respondents are available. Recent research, however, suggests that the response rate of specific respondents might be much lower or higher than these average estimates. For instance, an analysis of response rates in top management samples found a mean response rate of 32% (Cycyota & Harrison, 2006) in contrast to previous average estimates of 57% (Roth & BeVier, 1998). Similarly, Baruch and Holtom (2008) found that response rates from organizational representatives (mostly top executives) were considerably lower than for other respondents (35.7% vs. 52.7%). Although both studies focused on top executives only, these findings suggest that general response

rates may be uninformative for researchers interested in predicting the response rate for specific respondent groups. Therefore, a first objective of this paper is to provide estimates of response rates for different types of respondents.

Second, several researchers have suggested that response rates are declining over time as a result of the increasing popularity of surveys (e.g., Baruch, 1999; Cychota & Harrison, 2006; Rogelberg & Stanton, 2007). Thus, it might be that the response rate estimates calculated by Roth and BeVier (1998) on the basis of studies published during the years 1990-1994 are too optimistic. Although a recent study sampling response rates from the year 2000 and the year 2005 found no decrease in response rates over time (Baruch & Holtom, 2008), Cychota and Harrison (2006) suggested that response rate trends may reflect a linear trend and studying published response rates over a longer time period may be a more appropriate approach than selecting only two separate years. Therefore, a second objective of this paper is to provide more recent response rate guidelines on the basis of 14 years of published studies in organizational science.

Third, researchers may use previous findings regarding response enhancing techniques as a guideline for designing their survey to obtain a high response rate. Past research has extensively documented and compared the effectiveness of these different techniques. However, research suggests that the response enhancing techniques may not be equally effective for different types of respondents. For instance, none of the techniques initially suggested by Roth and BeVier (1998) increased top management responses (Cychota & Harrison, 2002, 2006). Similarly, Baruch and Holtom (2008) found that follow-up was associated with low response rates for top executive respondents, but not for the remainder of the population. Although these studies were the first to suggest that some techniques might be more or less effective depending on the focal respondent type, they did not systematically examine the moderating role of respondent type in the relation between response techniques and response rates. Thus, the global findings and guidelines regarding the effectiveness of various techniques could be misleading to some extent as the effectiveness of the various techniques also likely varies across different types of

respondents. A third objective of the current study, therefore, is to examine hypotheses about the differential prediction of specific response enhancing techniques across respondent type.

In sum, the current study expands upon existing knowledge of response rates by conducting a large-scale review of published response rates. We analyzed response rates and response enhancing techniques for different respondent groups on the basis of published survey articles of 12 journals in I/O Psychology, Management and Marketing from 1995 to 2008.

The results of this study should provide academic survey researchers and, to a lesser extent, practitioners with a range of empirically based guidelines to assist them in designing and optimizing survey studies for specific types of respondents. It is important for researchers to have an idea of the response rate to expect when planning a study, as low response rates cause smaller than expected sample sizes. In turn, smaller samples decrease statistical power, increasing the size of confidence intervals around the statistical parameters estimated on the basis of the sample, and they may limit the types of statistical techniques that can be applied to the data collected. Instead of only reactively evaluating response rates (i.e., after the study was conducted), as is typically done (Rogelberg & Stanton, 2007), researchers might proactively use response rate guidelines when designing their survey study by deciding upfront which techniques they will use for attaining a desirable response rate for a specific population of respondents.

Response Enhancing Techniques

The literature is rife with studies that investigate techniques for influencing response to surveys. These techniques have been integrated in what has become known as the 'tailored design method' (TDM; Dillman, 2000; previously referred to by Dillman as the 'total design method'). The TDM encompasses a number of rigorous techniques and steps that, when accurately followed, are proposed to increase survey response rates considerably. Roth and BeVier (1998) also identified additional techniques that are effective in organizational research. Together, nine techniques are assumed to be effective for increasing response rates.

A first technique that has been found to be effective in enhancing response rates is advance notice (Edwards et al., 2002; Fox, Crask, & Kim, 1988; Roth & BeVier, 1998; Yammarino, Skinner, & Childers, 1991). When using advance notice, researchers notify their participants in advance that they will receive a survey to complete. Prenotification is assumed to be effective because it has the same effect as foot-in-the-door techniques derived from self-perception procedures. Participants implicitly comply with an initial, reasonable request to “help the researcher”. When the actual questionnaire arrives, some individuals will feel obligated to follow-up on their apparent commitment, even when this commitment is to an unfamiliar external source (Allen, Schewe, & Wijk, 1980).

Second, follow-up consists of contacting participants that have not yet responded to the survey to remind and encourage them to participate. Follow-up should not only be effective in reminding participants, but also underscores the importance of the questionnaire and instills some form of regret or guilt in the participant (Paxson, 1995). In line with this reasoning, follow-up procedures have generally been found to be effective in enhancing response rates (Edwards et al., 2002; Fox et al., 1988; Yammarino et al., 1991; Yu & Cooper, 1983).

Third, monetary incentives or gifts have also been found to enhance response rates (Edwards et al., 2002; Church, 1993; Hopkins & Gullickson, 1993; Yammarino et al., 1991). Including an incentive to complete the questionnaire may help in attracting the attention of participants but may also instill some form of guilt. Participants may feel obliged to reciprocate and compensate the freely given gift by putting in effort and participate in the survey (Gendall, Hoek, & Brennan, 1998).

Fourth, several researchers have found that when the survey topic is highly relevant to the population surveyed, higher response rates can be obtained than when participants are not interested in the topic (Edwards et al., 2002; Heberlein & Baumgartner, 1978; Roth & BeVier, 1998). Topic salience is a type of interaction between target population and researcher interest and is assumed to result in high motivation and involvement of the participants.

The fifth technique that is frequently used is personalization. By personally addressing participants in a cover letter or by including a personal signature at the end of the cover letter, researchers may convey the importance of their participation to the participants and they may start building a personal relationship with the participants. Personalization has also been found to be effective in increasing response rates (Yammarino et al., 1991; Yu & Cooper, 1983).

Six, some studies have found that preserving the anonymity of participants by using identification numbers may increase response rates (McKee, 1992; Roth & BeVier, 1998). This technique may lead participants to feel safe because their identity is not compromised while at the same time they remain accountable for responding as they may be contacted for follow-up through the identification code (Dillman, 1978).

Seven, Dillman (2000) suggested that university sponsorship of the survey would increase response rates because of potential past benefits and experiences that respondents might have received from the university. Potential collaboration between the surveying organization and the university may lead to a more neutral, confidential, and credible image of the survey initiative. Several studies found that mentioning university involvement or collaboration with a university was beneficial for response rates (Bruvold, Comer, & Rospert, 1990; Edwards et al., 2002; Fox et al., 1988).

Eight, a key variable determining response rates is whether the survey was mailed or not to the respondents. Mailed surveys yield a considerably lower response rate than surveys that are distributed personally (Roth & BeVier, 1998). Social exchange theory suggests that building a relationship between the researcher and the potential participant in survey research can decrease psychological costs and increase rewards for respondents (Dillman, 2000). In addition, personally handing-out surveys may lead to more accountability or perceived accountability.

Nine, in the last decade organizational researchers have increasingly relied on Internet technology as a means for administering surveys. Advantages of using the Internet include cost savings associated with eliminating the printing and mailing of survey instruments and

having returned survey data already in an electronic format. One line of thought, however, has suggested that using electronic administration modes may result in lower response rates because of concerns of Internet security, the receipt of electronic “junk mail” or “spam”, and lack of personal relationship between researcher and respondents (Sills & Song, 2002). Although few studies in organizational contexts have directly addressed this issue, initial evidence attests to lower response rates for online administration modes in comparison to more traditional paper-and-pencil administration (Converse, Wolfe, Huang, & Oswald, 2008; Shih & Fan, 2008).

Differential Prediction across Respondent Groups

The third objective of the current study was to examine hypotheses about the differential prediction of specific response enhancing techniques across respondent types. The idea that response enhancing techniques may have a different effect depending on the respondent group surveyed is based on *leverage-salience theory* (Groves, Singer, & Corning, 2000). This theory suggests that a single survey design attribute will have different “leverages” on the cooperation decision for different persons. The theory further stipulates that the activation of the potential leverage depends on whether the attribute is made salient to the sample person during the survey request. Thus, different design alternatives may be attractive to different subgroups. For example, for some individuals, the topic may be important; for others, whether a reputable organization is conducting the survey may be significant; and for still others, a chance to receive a cash reward may be of consequence.

In line with this framework, we distinguished five different respondent groups (non-working respondents, consumers, non-managerial employees, managers, and top executives) that are typically involved in survey research in organizational science on the basis of a taxonomy of work categories (Applebaum, 1986). We identified relevant characteristics for each of these respondent groups and developed hypotheses regarding the response enhancing techniques that would be more and less effective for each respondent type in comparison to the *total* group of respondents.

A first group of respondents are individuals that are not employed at the time of survey (e.g., students, retired individuals, and job seekers). Given their non-working status, we expect these individuals to be generally more concerned about financial issues (Creed & Klisch, 2005). As a result, any (monetary) incentives that are provided during survey process may attract more attention than in the other groups leading to a stronger effect of incentives on response for this group. In contrast, we expect that topic salience will be less effective for this group. Other respondent groups (e.g., employees) may be highly involved to represent their organization on salient issues towards external parties. However, for non-working respondents, highly salient issues are, for instance, surveys focusing on their position on the labor market. As noted by Van den Berg, Linderboom, and Dolton (2006, p. 586): “Discouraged job seekers may have difficulties finding a job and may be less inclined to participate in a survey, especially when this survey is about job search behavior and labor market prospects”. Thus, it is assumed that it is more difficult to attract respondents’ attention by presenting a highly relevant survey topic.

H₁: Incentives will have a more enhancing effect on response rates for non-working respondent types than in the total group of respondents.

H₂: Topic salience will have a less enhancing effect on response rates for non-working respondents than in the total group of respondents.

A second group of respondents are individuals who are surveyed as users/ consumers of specific products/services (‘consumers’). In contrast to employees in an organization, consumers may not be as closely involved with the organization and may have had fewer chances to develop a personal relationship with organizations. Therefore, we expect that personalization of the questionnaire will lead to better relationship-building and may yield more positive effects on response rates than in other respondent groups. In contrast, we expect that explicitly mentioning sponsorship will have less strong effects for this respondent group. The effect of sponsorship is believed to result from previous experiences and benefits respondents may have experienced from working with university researchers

(Dillman, 2000). In organizations, collaboration with university partners may be more institutionalized and may be more visible and promoted yielding more favorable responses. In contrast, the contacts and experiences consumers had with researchers may be more transient in comparison to the employees of an organization.

H₃: Personalization will have a more enhancing effect on response rates for consumers than in the total group of respondents.

H₄: Sponsorship will have a less enhancing effect on response rates for consumers than in the total group of respondents.

A third group of respondents are working employees that have no supervisory or managerial responsibilities in the organization (e.g., blue collar workers and professionals). For this group, we expect that using a web-based administration mode such as e-mail or online questionnaires may results in higher response rates than in the overall group. First, in comparison to managerial groups, these employees may receive less emails, requests for surveys, and may have more time to respond to their emails or complete questionnaires during company time (Cycyota & Harrison, 2006). Second, employees may be easier to reach via email than consumers or non-working respondents. For the non-managerial group, we expect that incentives will be less beneficial than the overall group of respondents. While incentives are generally argued to lead to higher response rates, we expect that these effects will be less strong for paid employees in an organization. Given that employees are already compensated for their work in the organization, organizational respondents are likely to require higher incentives to affect the same change in response due to the competing demands placed on respondents' working day, the value they place on their time, and, possibly, their perception of the value of the information to the survey sponsor. In addition, as suggested by intrinsic motivation research (Deci, Koestner, & Ryan, 1999), there might be a trade-off between providing incentives and the intrinsic interest in completing a questionnaire. The interest in the topics surveyed is likely higher in an organizational sample as the questions often directly relate to their work situation. Offering an additional incentive to

complete the questionnaire may decrease this intrinsic motivation. Indeed, Groves, Presser and Dipko (2004) found that the tendency for the “interested” to cooperate more readily with a research survey was diminished when monetary incentives were provided. This would also explain why Roth and BeVier found no relationship between incentives and response rates ($r = -.04$, ns.) in their meta-analysis of organizational research.

H₅: Web-based administration will have a more enhancing effect on response rates for non-managerial employees than in the total group of respondents.

H₆: Incentives will have a less enhancing effect on response rates for non-managerial employees than in the total group of respondents.

A fourth group are employees with supervisory (e.g., when they supervised the actual work carried on within the organization) or managerial responsibilities (e.g., respondents directing subdivisions or subgroups within a company). For this group, we expect that emphasis on university sponsorship may result in higher response rates in comparison to the overall group. Managers and supervisors may be more sensitive to the involvement of a university partner as they may be aware that such collaborations may have beneficial effects for the company and their group (Bonaccorsi & Piccaluga, 1994). In addition, managers often take part in MBA classes or are involved in alumni associations from universities. As they have more responsibilities and a higher position in the organization, they may feel more accountable and responsible towards the university for the collaboration. As argued before for the employee group, we also expect that incentives will be less effective in the managerial respondent group.

H₇: Sponsorship will have a more enhancing effect on response rates for managerial employees than in the total group of respondents.

H₈: Incentives will have a less enhancing effect on response rates for managerial employees than in the total group of respondents.

The final group consisted of top executives defined as organizational representatives predominantly concerned with the position and relationships of the organization in the total economic and social-institutional setting. Top executives have proven to be a difficult group to reach through survey efforts. In a meta-analysis of published studies, Cychota and Harrison (2006) found that topic salience was the only traditional technique that was effective in enhancing response rates. Given the tight schedule of top executives, they may put in effort in participating only in surveys that have direct consequences for their business and responsibilities (e.g., current trends or environmental threats). Similar to the two previous organizational groups, we expect that incentives will be less beneficial in top executive groups. Any incentive would seem negligible in comparison to the normal earnings of this group.

H₉: Salience will have a more enhancing effect on response rates for top executives than in the total group of respondents.

H₁₀: Incentives will have a less enhancing effect on response rates for top executives than in the total group of respondents.

Method

Selection and Identification of Journals

We tried to include response rates published in a variety of journals from different organizational research traditions. An exclusive focus on top-tier journals may restrict the range of the observed response rates and may lead to upwardly biased estimates of response rates. Therefore, we included both top-tier and lower-tier journals. In addition, we also broadened the scope of research traditions included in response rate summaries by including journals reporting survey research in Marketing. Combining response rates from three different research traditions (i.e., I/O Psychology, Management, and Marketing) should be especially worthwhile, as all three disciplines rely heavily on survey methodology research in organizational settings but sometimes have a different focus. For instance, survey research in Marketing may involve more consumers as respondent types than Management and I/O psychology traditionally do.

The top-tier journals included in this study were selected on the basis of the highest citation counts as reported by the Journal Citations Report of the Institute for Scientific Information (ISI). Citation counts form an important and stable indicator of journal prestige (Anseel, Duyck, De Baene, & Brysbaert, 2004). Top-tier journals were considered to be part of the 20% most-cited journals in their respective disciplines, as reported by ISI Journal Citation Reports. On the basis of this criterion, we selected two journals from the ISI category Psychology, Applied: *Journal of Applied Psychology* and *Personnel Psychology*, two journals from the ISI category Management: *Academy of Management Journal* and *Administrative Science Quarterly*, and two marketing journals from the ISI category Business: *Journal of Marketing* and *Journal of Marketing Research*. Note that these journals have constantly been ranked into the 20% most-cited journals in their respective categories from the moment Journal Citation Reports data have become available.

For the lower-tier journals, we selected journals that have not been continuously included in the Journal Citation Report of ISI in the period under study (1995-2008)¹. Thus, citation counts were not available for these journals. Among the journals that complied with this criterion, we identified journals that publish research within the same content areas as the top-tier journals to keep the domain constant and randomly selected four journals: *European Journal of Work and Organizational Psychology* and *Journal of Managerial Psychology* in the category I/O Psychology, *Journal of Management Development* and *Journal of Managerial Issues* in the category Management, and *European Journal of Marketing* and *International Review of Retail, Distribution and Consumer Research* in the category Marketing. Together, we believe this set of journals provides an appropriate mix of survey research conducted and published in organizational science. After identification of the journal set, all back issues from 1995 to 2008 of these journals were retrieved. Editors, publishers, and international libraries were contacted and back issues were ordered when they were not readily available in paper or electronic version. All issues originally identified were eventually collected for coding. A list of all studies retrieved is available from the authors.

Inclusion Criteria

The following criteria for inclusion were used. First, studies had to be published in the period 1995-2008 and had to use a survey methodology. Second, information to calculate a response rate had to be available. Third, only written and web-based surveys (as opposed to face-to-face or telephone surveys) were included. Surveys reporting a response rate of 100% were checked if they were lab or scenario studies (e.g., in training) with obligatory response. When survey participation was obligatory, surveys were also excluded from the analyses. A total of 2,037 studies from 1,761 articles met our criteria. The coded studies reflected a total of 1,251,651 individual respondents.

Coding

Given the large amount of studies to be coded, the entire set of studies was split in three subsets with a team consisting of one co-author and a research assistant coding two subsets. A third rigorously trained research assistant coded the third subset of studies published during the period 2004-2008. The coders made judgments about the presence, absence, or indeterminate nature of each of the response enhancing techniques in a study. Thus, a design matrix was constructed in which nine response enhancing techniques were indicated by a dichotomous variable (used = 1; not used = 0) or ordinal variable (1 = low salience, 2 = moderate salience, 3 = high salience) for each of the 2,037 survey studies. Based on a taxonomy of work categories (Applebaum, 1986) we also coded five different respondent types: non-working respondents ($N = 107$), consumers ($N = 149$), non-managerial employees ($N = 621$), managers ($N = 357$), and top executives ($N = 240$). Studies that relied on samples consisting of various types of respondents were coded as mixed ($N = 563$).

We closely followed coding and analytical procedures outlined by Cycyota and Harrison (2002), and Roth and BeVier (1998) to facilitate comparability of results. Similar to their analyses, each study served as one data point in our analyses. Inability to determine the presence of an independent variable was coded as a missing value (e.g., in situations where conflicting or vague cues were given such as “efforts were undertaken to increase the

response rate”). In all other cases, presence of the technique was coded 1, and absence was coded 0. When no mention was made of a technique, our coding defaulted to 0 (Cycyota & Harrison, 2002; Roth & BeVier, 1998). When authors stated that they followed Dillman’s (1978) TDM prescriptions, incentive, advanced notice, follow-up, and personalization were coded as 1. When there was more than one round of data collection (longitudinal studies) only the first round response rate was used (see also Baruch, 1999). Detailed description of the coding rules is available from the authors.

After independent coding, the coders of the first two sets met to resolve discrepancies by reaching consensus on the correct coding. Inter-rater agreement was satisfactory. Cohen’s kappas for the response enhancing techniques ranged between .76 and .91. An exception was salience (Cohen’s kappa = .38), indicating that the coders agreed less on whether a topic was salient or not. Roth and BeVier (1998) found a similarly low inter-rater agreement (.45) in coding salience. In cases when no agreement on the correct coding could be obtained, a third coder was consulted to resolve disagreement. The low inter-rater agreement is not only due to the subjective nature of salience but also to the lack of information available as studies rarely included information on the salience of the variables.

Results

Descriptive Statistics and Expected Response Rates

Means, standard deviations, correlations of response rates and coded response enhancing techniques are reported in Table 1. Our first objective was to compare expected response rates for different respondent types. A one-way ANOVA showed that type of respondent affected response rates, $F(5, 2013) = 47.23$, $p < .01$, $\eta^2 = .11$. Pairwise comparisons showed that non-working (61.5%) and non-managerial respondents (59.6%) had a significantly higher response rate than the other categories ($p < .01$). Next, the consumer respondents (44.1%) and managerial respondents (47.1%) had a significantly higher response ($p < .01$) rate than the top executive respondents (37.0%). We followed the same approach as Roth and BeVier (1998) and summarized response rates by reporting percentiles from the 90th through the 10th percentile level on the basis of previous response

rates. These percentiles for response rates can be found in Table 2. General estimates are separately reported for mailed paper-and-pencil and web-based surveys, and personally distributed surveys and broken down for the five identified respondent categories. We did not include the sixth “mixed” category in Table 2 because this group is relatively uninformative for researchers. Reporting response rates for mailed versus personally distributed surveys was warranted given the large effect size of mailing surveys ($M = 44.1\%$, $SD = 21.8\%$) versus not mailing surveys ($M = 62.9\%$, $SD = 23.2\%$), $p < .01$, $d = .84$.

Response Rate Trends

Our second objective was to examine response rate trends over time. As can be seen in Table 1, the zero-order correlation between response rate and survey year showed no direct decline in response rates over the years analyzed ($r = -.01$, ns). However, caution is needed as the increased use of response enhancing techniques over the years might have compensated for a potential decline in response rates. Inspection of the correlations in Table 1 shows that, over the years, researchers have relied less on postal questionnaires, more on advance notice, incentives, identification numbers, web-based administration and sponsorship. As shown before, all of these response enhancing techniques are associated with higher response rates. Thus, a more appropriate analytical strategy might be to control for the increased use of response enhancing techniques when examining response rate trends over time. When controlling for these techniques, we found a significant negative effect of survey year on response rate, $\beta = -.10$, $p < .01$ ($\Delta R^2 = .01$, $p < .01$). We also examined possible curvilinear trends over time, but found no significant curvilinear relationship between survey year and response rates.

Given that trends in response enhancing techniques seem to affect response rates trends, we also explored whether the efficacy of specific techniques for increasing response rates changed over the years. To this end, we conducted a hierarchical regression with the main effects of the response enhancing techniques and survey year in a first step and the interaction terms between each of the response enhancing techniques and survey year in a second step. The set of interaction terms between survey year and each of the response

enhancing techniques explained a significant amount of variance beyond the main effects of the response enhancing techniques and survey year ($\Delta R^2 = .01$, $p < .01$). Close inspection of the regression coefficients for each of the interaction terms, showed that the efficacy of advance notice ($p < .01$), follow-up ($p < .01$) and mailing surveys ($p < .01$) significantly declined whereas the efficacy of personalization significantly increased ($p < .01$).

Response Enhancing Techniques

Our third objective was to examine the hypothesized effects of various response enhancing techniques on response rates across respondent types. Table 1 shows that advance notice ($r = .08$, $p < .01$), personalization ($r = .14$, $p < .01$), topic salience ($r = .07$, $p < .01$), identification numbers ($r = .18$, $p < .01$), sponsorship ($r = .11$, $p < .01$), and personally distributing surveys ($r = .38$, $p < .01$) were positively associated with response rates. The use of follow-ups was negatively related to the reported response rate ($r = -.25$, $p < .01$).

Incentives and web-based administration were unrelated to response rates. To control for intercorrelations between the independent variables, we further examined the effect of the response enhancing techniques on response rates by using multiple regression analysis. As can be seen in the test of the first model in Table 3, advance notice ($\beta = .06$, $p < .05$), follow up ($\beta = -.16$, $p < .01$), incentives ($\beta = -.05$, $p < .05$), personalization ($\beta = .11$, $p < .01$), salience ($\beta = .05$, $p < .05$), identification numbers ($\beta = .09$, $p < .01$), sponsorship ($\beta = .05$, $p < .05$), mailing surveys ($\beta = -.31$, $p < .01$), and web-based administration ($\beta = -.06$, $p < .05$) were all significant predictors of response rates and explained 20% of variance in total.

To examine whether respondent type explained additional variance in response rates beyond the response enhancing techniques, we tested a second model where four effect coded variables reflecting the five identified respondent types (non-working, consumers, non-managerial, managerial, and top executives) were included in a second step of a hierarchical regression analysis. Given that we used four unweighted effects coded variables to represent the five respondent types, group comparisons are made in reference to the mean. When coding the variables, we used the non-working group as the 'focal' or 'base' group. As can be

seen in Table 3 (Model 2), respondent type explained a significant amount of variance beyond the response enhancing techniques ($R^2 = .06$, $p < .01$).

To test our hypotheses, we examined the significance of the specific hypothesized two-way interactions between the respondent types and the response enhancing techniques. We tested interactions between respondent groups for each response enhancing technique separately to facilitate interpretation, as an overall test of all two-way interaction effects would include 32 interaction terms in total. As recommended by Aguinis (2004), the specific regression coefficients corresponding to hypothesized interactions were interpreted only when the omnibus test of the family of interactions (e.g., all interactions between respondent groups and a specific technique) explained a significant amount of variance ($p < .01$) beyond the previously identified main effects. In Table 3, we reported the results for the five models (out of nine models tested) that explained 1% ($p < .01$) additional variance beyond the main effects of the response enhancing techniques and the effects coded variables representing respondent groups. Given that we chose the non-working respondents as the focal group in the effects coding, this group is not compared to the overall mean in Table 3. This test can be accomplished most simply by using another unweighted effects coding with a different reference group (Cohen, Cohen, West, & Aiken, 2004). In the alternative coding scheme, we coded the managerial respondents as focal coding group (detailed results for the alternative coding scheme are available from the authors).

For the non-working respondents, Hypothesis 1 predicted that incentives would have a more enhancing effect, whereas Hypothesis 2 predicted that salience would have a less enhancing effect on response rates in comparison to the total group of respondents. In line with our hypotheses, results showed a significant positive coefficient on the interaction coefficient for incentives by non-working respondents ($\beta = .13$, $p < .01$) and a significant negative coefficient for salience by non-working respondents ($\beta = -.07$, $p < .05$). As can be seen in Figure 1, this means that the slope for incentives on response rates was more positive and, as indicated in Figure 2, the slope for salience was more negative than the mean slope over all groups.

For the consumer respondents, Hypothesis 3 predicted that personalization would have a more enhancing effect, whereas Hypothesis 4 predicted that sponsorship would have a less enhancing effect on response rates in comparison to the total group of respondents. Interactions between respondent groups by personalization did not explain a significant amount of additional variance beyond the main effects, thus hypothesis 3 was not supported. As can be seen in Table 3, interactions between respondent groups and sponsorship explained additional variance beyond the main effects ($\Delta R^2 = .01$, $p < .01$) including a significant Z_1 by sponsorship interaction term ($\beta = -.12$, $p < .01$). As shown in Figure 3, this indicated that the slope for sponsorship on response rates for consumers was less positive than for the overall group, supporting Hypothesis 4.

For the non-managerial employees, Hypothesis 5 predicted that web-based administration would have a more enhancing effect, whereas Hypothesis 6 predicted that incentives would have a less enhancing effect on response rates in comparison to the total group of employees. In line with these hypotheses, results showed a significant positive coefficient on the interaction coefficient Z_2 by administration mode ($\beta = .21$, $p < .01$) and a significant negative coefficient Z_2 by incentives ($\beta = -.08$, $p < .05$). As can be seen in Figure 4, this indicates that the slope for web-based administration on response rates was more positive and, as can be seen in Figure 5, the slope for incentives was more negative than the mean slope over all groups.

For the managerial group, Hypothesis 7 predicted that sponsorship would have a more enhancing effect, whereas Hypothesis 8 predicted that incentives would have a less enhancing effect on response rates in comparison to the total group of employees. Results showed a significant positive coefficient on the Z_3 by sponsorship term ($\beta = .07$, $p < .05$). Thus, as shown in Figure 6, Hypothesis 7 was supported. However, there was no significant Z_3 by incentives interaction term ($\beta = -.04$, *ns.*). Hypothesis 8 was not supported.

For the top executive group, Hypothesis 9 predicted that salience would have a more enhancing effect, whereas Hypothesis 10 predicted that incentives would have a less

enhancing effect on response rates in comparison to the total group of employees. In line with these hypotheses, results showed a significant positive coefficient on the interaction coefficient Z_4 by salience ($\beta = .19, p < .05$) and a significant negative coefficient Z_4 by incentives ($\beta = -.07, p < .05$). As can be seen in Figure 7, this indicates that the slope for salience on response rates was more positive and, as can be seen in Figure 8, the slope for incentives was more negative than the mean slope over all respondents. Table 4 provides a summary of the results concerning the hypothesized interaction effects.

Discussion

Main Conclusions

Our first objective was to examine expected response rates across respondent groups. Our conclusion is that the average response rates indeed vary depending on the respondent type. Response rates that can be expected when surveying top executives are lower than when surveying consumers or managers. In turn, these response rates can be expected to be lower than non-working respondents or non-managerial employees. This extends previous findings reporting a mean response rate of 34% to mailed surveys for top executives (Cycyota & Harrison, 2006) and 35.7% for organizational respondents (Baruch & Holtom, 2008). Our findings indicate that expected response rates do differ not only for top executives but also for other respondent types. On the one hand, it seems that the higher respondents are situated in the organizational hierarchy, the harder it may be to persuade them to respond to surveys. On the other hand, it seems that consumers are equally hard to involve in survey research as managerial respondents. Our findings can also be compared to the results of Cycyota and Harrison. Similar to their findings, we found a mean response rate of 35.0% ($SD = 17.5\%$) for mailed surveys to top executives.

Our second objective was to examine response rate trends over time. The average response rate we obtained (52.3%) was lower than the average response rate of 57% reported by Roth and BeVier (1998). This finding suggests a slight decline in response rates in the years following the analyses of Roth and BeVier (1998). These percentages should be compared with caution, of course, as different journals were analyzed in the study of Roth

and BeVier (1998), making direct comparison difficult. Our own analyses show a complicated picture of response rate trends. At first sight, there seems to be no decline in response rates over the years, as we found no significant direct association between response rate and publication year. However, our results show that, when controlling for the use of response enhancing techniques, response rates were indeed declining. Thus, it might be that, over the years, researchers experienced slowly declining survey response rates and tried to anticipate these lower response rates by using response enhancing techniques more extensively. As a result, the increased use of response enhancing techniques seems to have compensated for a potential decline in response rates. Previously, researchers have expressed concerns that “the current survey mania tends to cheapen and threaten the entire enterprise of surveying” (Dillman, 2002, p. 479). Although our findings suggest that, to date, the current decline is relatively minor, future research should cautiously monitor these figures as survey studies have become more sophisticated with more and better response enhancing techniques. This might be a threat when overuse of response enhancing techniques also affects the efficacy of these techniques. This seems to be implied by our findings that advance notice, follow-up and mailing have become less effective over the years. Although respondents may have come less sensitive to some response enhancing initiatives, these results also point to a potential way out of this dilemma. In future research, personal contact may be the most appropriate strategy to contact respondents as personalization was found to become more effective over the years.

Our third objective was to examine specific hypotheses regarding the effectiveness of response enhancing techniques for surveying specific respondent groups. First, analyses across groups corroborated that advanced notice, salience, personalization, identification numbers, sponsorship, and not mailing surveys are the most beneficial strategies for increasing response rates (see Roth & BeVier, 1998). One surprising finding was that follow-up yielded a decrease in response rates as indicated by the correlation and regression coefficients. Some previous studies (Yammarino et al. 1991; Yu & Cooper, 1983) reported a significant positive relationship between follow-up and response rates, whereas others found

non-significant (Roth & BeVier, 1998) or negative relationships (Baruch & Holtom, 2008). A possible explanation is that there may exist an inverse causal relationship between response rate and use of follow-up. When researchers are confronted with a low response rate, they may decide to send a final reminder in hope of increasing the response rate. Thus, a low response rate might lead to increased use of follow-up. Although the zero-order relationship between incentives and response rate was non-significant (similar to Baruch & Holtom, 2008), incentives appeared to have a negative effect on response rates in a regression analysis. A similar reversed causality mechanism might be responsible for this unexpected finding. It might be that researchers double their efforts and use more incentives in samples or surveys where they expect low response rate. Future studies should test this hypothesis by taking into consideration the response rates obtained before and after follow-up and incentives. The current study was also one of the first in the organizational domain to evaluate the effects of web-based survey administration. When controlling for other response enhancing techniques, we found a negative effect of web-based survey administration. Similar to previous studies outside organizations (Converse et al., 2008; Shih & Fan, 2008), researchers should anticipate somewhat lower average response rates using Internet technologies in comparison to more traditional paper-and-pencil surveys.

Next, in line with our hypotheses, results suggest that response enhancing techniques have a differential impact depending on the respondent group. Our results suggest that (a) incentives are more effective for non-working respondents, but less effective for non-managerial employees and top executives, (b) salience is less effective for non-working employees and more effective for top executives, (d) sponsorship is more effective for managers but less effective for consumers, and (e) web-based administration is more effective in non-managerial samples in comparison to the overall effects of these response enhancing techniques in our sample. The finding that topic salience was more effective for managerial respondents than for the other groups is in line with the findings of Cychota and Harrison (2006). They reported that topic salience was one of the only response enhancing techniques that was effective for top executives.

Theoretical and Practical Implications

From a theoretical perspective, these findings are important as they provide empirical evidence for the moderating role of respondent type in the relationship between response enhancing techniques and response rates. Our findings are in line with the central tenets of leverage-salience theory (Groves et al., 2000), which posits that people vary in the importance they assign to different aspects of a survey request. This theory has received emerging support in public opinion research (e.g., Trussel & Lavrakas, 2004), but has received little attention in organizational research. One of the key implications of this theory is that researchers should try to understand how specific respondent characteristics relate to the underlying mechanisms of each of the response enhancing techniques. We believe the present study provides a first step supporting the usefulness of leverage-salience theory for better understanding response mechanisms in organizations. However, the coding of respondent groups in published studies allows for only general research hypotheses. Future research may want to extend these findings by setting up experimental studies to test more fine-grained hypotheses. A more refined and elaborate taxonomy of respondent types might yield a better understanding and more specific recommendations to researchers. Future research may also examine other response enhancing techniques that were not included in this quantitative review (e.g., survey length, social network).

From a practical perspective, the current findings should be most relevant to aid academic survey researchers in designing survey studies. After all, the results are based on a large-scale summary of survey studies published in the *academic* literature. Although the obtained results will also be informative to practitioners such as survey consultants, some caution is needed when generalizing these findings as the specific role of practitioners might affect some of the dynamics in the survey process. For instance, mentioning sponsorship or providing incentives may lead to different effects when a consulting firm rather than an academic researcher is involved. A first important recommendation for academic researchers designing a survey is to pay close attention to the type of respondents targeted. For instance, when considering the use of mail surveys for a consumer sample they should be aware they

might have to distribute considerably more surveys than they would need to do for non-working or non-managerial employee samples to obtain a similar sample size. A second recommendation is that researchers should take customized measures to enhance the response rate for their sample. For instance, researchers might consider emphasizing the relevance of the survey when surveying top executives, mentioning sponsorship in surveys among managers, provide incentives among unemployed respondents, and use web-based procedures when targeting non-managerial employees. Although most researchers would agree that certain response enhancement techniques may be particularly useful for certain groups, some might question the practical help of these guidelines as it is generally recommended to use all of the techniques in every circumstance anyway to maximize response rates (Dillman, 2000). Our results go beyond this recommendation by showing that some techniques are less effective in some respondent groups. If researchers have to make decisions in which measure to invest resources (e.g., incentives), the current findings may be helpful. We summarized these guidelines for survey researchers in Table 5.

Finally, an important point on how response rates guidelines may be (mis)used in practice should be mentioned. Rogelberg and Stanton (2007, p. 197) cogently argued against elusive “acceptable” response rates: “Although such descriptions put a response rate into context, the fact that everyone else achieves 30%, 40%, or 50% does *not* help to demonstrate that the reported research is free from non-response bias”. We concur: A low response rate does not necessarily entail non-response bias. Similarly, a high response rate in comparison to the guidelines reported in this study, does not mean that the sample characteristics are unbiased.

The current response rate estimates are meant to serve as a broad guideline giving researchers a general idea of the average response rates that have been obtained in previous research and the differential effectiveness of response enhancing techniques. We emphasize that, rather than using the current findings as a post hoc evaluation of an obtained response rate, these findings should primarily help researchers in planning their studies. We believe that the present study provides useful information to help them a priori

estimate the response rate they may expect to obtain and thus, the number of surveys they will need to send out to achieve a satisfactory statistical power. In any case, the guidelines reported do not replace a rigorous non-response analysis. Therefore, we encourage researchers to conduct a formal analysis of potential non-response bias (e.g., Rogelberg et al., 2003).

In sum, this study provides scholars with empirically based guidelines regarding which response rates are typically obtained across different types of respondents and which response enhancing techniques may be most effective. These findings should be helpful for researchers to better plan survey studies and to attain the sample size envisioned.

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Footnotes

¹ *European Journal of Work and Organizational Psychology*, and *Journal of Managerial Psychology* have been included in ISI Web of Science in 2005 and 2008, respectively.

Table 1

Descriptive Statistics and Correlation Coefficients

| | <i>M</i> | <i>SD</i> | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. |
|--------------------------|----------|-----------|-------|--------|-------|--------|-------|--------|--------|--------|-------|------|
| 1. Advance Notice | .23 | .42 | | | | | | | | | | |
| 2. Follow-up | .31 | .46 | .12** | | | | | | | | | |
| 3. Incentives | .18 | .38 | .09** | .11** | | | | | | | | |
| 4. Personalization | .39 | .49 | .33** | .17** | .09** | | | | | | | |
| 5. Salience | 1.81 | .70 | .08** | -.01 | .00 | .02 | | | | | | |
| 6. Identification Number | .25 | .33 | .05* | -.08** | .07** | -.01 | .05* | | | | | |
| 7. Sponsorship | .35 | .48 | .01 | -.06* | .04 | .02 | .01 | .10** | | | | |
| 8. Survey Mailed | .61 | .49 | -.01 | .32** | -.05* | -.11** | -.03 | -.22** | -.19** | | | |
| 9. Administration mode | .05 | .22 | .06** | -.01 | .10** | -.05 | .03 | .16** | .08** | -.20** | | |
| 10. Year of survey | 8.17 | 3.94 | .07** | -.04 | .09** | .03 | .04 | .28** | .15** | -.22** | .26** | |
| 11. Response Rate | 52.34 | 23.96 | .08** | -.25** | -.04 | .14** | .07** | .18** | .11** | -.38** | -.02 | -.01 |

Note. Pairwise sample sizes ranged from 1551 to 2037. Nominal variables were coded 0 (not present) or 1 (present). Salience was coded 1 (low), 2 (moderate), or 3 (high). Administration mode was coded 0 (paper-and-pencil) or 1 (web-based). Year of survey was coded as an ordinal variable ranging from 1 (1995) to 14 (2008). $p < .05$, ** $p < .01$.

Table 2

Expected Response Rates for Mailed, Personally Distributed Surveys and Different Respondent Types

| | Percentile | All respondents | Non-working respondents | Consumer respondents | Non-managerial respondents | Managerial respondents | Top-management |
|--------------------------------|------------|-----------------|-------------------------|----------------------|----------------------------|------------------------|----------------|
| Mailed surveys | 90 | 78% | 84% | 67% | 86% | 75% | 60% |
| (paper-and-pencil | 80 | 66% | 71% | 51% | 79% | 63% | 48% |
| and web-based) | 70 | 56% | 65% | 42% | 71% | 54% | 42% |
| | 60 | 48% | 56% | 37% | 60% | 44% | 37% |
| | 50 | 41% | 47% | 32% | 51% | 37% | 31% |
| | 40 | 35% | 40% | 29% | 46% | 30% | 25% |
| | 30 | 29% | 35% | 23% | 40% | 24% | 23% |
| | 20 | 23% | 26% | 21% | 32% | 20% | 20% |
| | 10 | 19% | 18% | 18% | 22% | 17% | 14% |
| Personally distributed surveys | 90 | 91% | 93% | 89% | 92% | 87% | 93% |
| | 80 | 86% | 89% | 81% | 88% | 83% | 79% |
| | 70 | 80% | 81% | 75% | 83% | 72% | 75% |
| | 60 | 75% | 77% | 66% | 76% | 67% | 37% |
| | 50 | 68% | 74% | 58% | 69% | 58% | 36% |
| | 40 | 60% | 67% | 52% | 63% | 56% | 33% |
| | 30 | 52% | 55% | 47% | 57% | 51% | 30% |
| | 20 | 44% | 45% | 31% | 47% | 45% | 28% |
| | 10 | 33% | 30% | 15% | 38% | 39% | 18% |

Note. Percentages are unit weighted.

Table 3

Results of Regression Analyses for Effect of Response Enhancing Techniques and Respondent Type on Response Rates

| Variable | Main effects response techniques (Model 1) | Main effects of respondent type (Model 2) | Interaction respondent type by incentives (Model 3) | Interaction respondent type by salience (Model 4) | Interaction respondent type by identification (Model 5) | Interaction respondent type by sponsorship (Model 6) | Interaction respondent type by administration mode (Model 7) |
|----------------------------------|---|--|--|--|--|---|--|
| Main Effects | | | | | | | |
| Advance notice | .06* | | | | | | |
| Follow-up | -.16** | | | | | | |
| Incentives | -.05* | | | | | | |
| Personalization | .11** | | | | | | |
| Salience | .05* | | | | | | |
| Identification number | .09** | | | | | | |
| Sponsorship | .05* | | | | | | |
| Mail survey | -.31** | | | | | | |
| Administration mode | -.06* | | | | | | |
| Additive Main Effects | | | | | | | |
| Z ₁ | | -.06 | | | | | |
| Z ₂ | | .21** | | | | | |
| Z ₃ | | -.04 | | | | | |
| Z ₄ | | -.17** | | | | | |
| Interaction effects | | | | | | | |
| Z ₁ x Model technique | | | .06 | -.19* | -.07 | -.12** | -.06 |
| Z ₂ x Model technique | | | -.08* | .06 | .05 | .02 | .21** |
| Z ₃ x Model technique | | | -.04 | .17* | .14** | .07* | -.04 |
| Z ₄ x Model technique | | | -.07* | .19* | -.03 | .01 | -.18** |
| <i>F</i> | 41.12 | 21.19 | 3.44 | 3.37 | 4.20 | 3.60 | 3.27 |
| <i>df</i> | 1474 | 1069 | 1065 | 1065 | 1065 | 1065 | 1065 |
| ΔR^2 | .20** | .06** | .01** | .01** | .01** | .01** | .01** |

Note. Summary of the results of two-way interactions between respondent types and response techniques. Model 2 includes the main effects of Model 1. Model 3 to 7 include the main effects of Model 1 and Model 2. Interactions between the respondent groups and techniques are reported for each technique separately to facilitate interpretation. Only the results for the five interaction models (out of nine tested) that explained a significant amount of variance beyond the main effects are reported. The five respondent types (non-working, consumers, non-managerial, managerial and top management) are unweighted effects coded in Z₁, Z₂, Z₃, Z₄ with the non-working respondents as focal group. All regression coefficients are standardized coefficients. * $p < .05$. ** $p < .01$

Table 4

Summary of Tests of Hypotheses.

| | Non-working | Consumer | Non-managerial | Managerial | Top-management |
|---------------------|----------------------------------|--------------------------------------|----------------------------------|--------------------------------------|-----------------------------------|
| Advanced notice | ns. | ns. | ns. | ns. | ns. |
| Follow-up | ns. | ns. | ns. | ns. | ns. |
| Incentives | + | ns. | - | ns. | - |
| | (H₁ supported) | | (H₆ supported) | (H₈ not supported) | (H₁₀ supported) |
| Personalization | ns. | ns. | ns. | ns. | ns. |
| | | (H₃ not supported) | | | |
| Salience | - | - | ns. | + | + |
| | (H₂ supported) | | | | (H₉ supported) |
| Identification | ns. | ns. | ns. | + | ns. |
| Sponsorship | ns. | - | ns. | + | ns. |
| | | (H₄ supported) | | (H₇ supported) | |
| Mail survey | ns. | ns. | ns. | ns. | ns. |
| Administration mode | ns. | ns. | + | ns. | ns. |
| | | | (H₅ supported) | | |

Note. Entries indicate whether techniques had a stronger (+), weaker (-), or non-significant effect (ns.) on response rates in the specific respondent group in comparison to their average effect across groups.

Table 5

Response Rate Guidelines for Survey Researchers.

General guidelines

- The use of the following response enhancing techniques may increase the response rate obtained: Advance notice, personalization, topic salience, identification numbers, and sponsorship.
 - Combining several response enhancing techniques is advisable. Even when controlling for the presence of other techniques, advance notice, personalization, salience, identification numbers, and sponsorship are associated with higher response rates.
 - Is personal distribution of surveys an option? If feasible, personally distributing surveys will lead to considerable higher response rates.
 - Are response incentives worth the cost? Contrary to common sense, incentives do not seem to lead to higher response rates.
 - An increased use of response enhancing techniques seems necessary to obtain similar response rates as in the past. However, some techniques (e.g., advance notice, follow-up, mailing) have become less effective over the years. If the observed trends continue, personalization should be the only technique to become more effective in the coming years.
 - Balance the cost and benefits of using a web-based survey. Web-based surveys may lead to somewhat lower response rates.
-

Guidelines for specific respondent groups

- Consider the targeted respondent group when planning a survey study. As shown in Table 1, considerable differences in response rates between respondent groups can be expected. Anticipate lower response rates for top executives, but also lower response rates should be expected for consumers and managers in comparison to non-managerial employees and non-working respondents.
 - Analyze characteristics of the respondent group when planning which response enhancing techniques to use in a survey effort. Different survey design alternatives may be attractive to different subgroups as predicted by leverage-salience theory.
 - When surveying top executives, emphasize salience of the survey topic, but do not use incentives.
 - Mentioning sponsorship is advisable when surveying managerial respondents.
 - When surveying non-managerial employees, web-based administration might be effective, but avoid using incentives.
 - Mentioning sponsorship is not a very effective technique to enhance response rate in consumer samples.
 - When surveying non-working respondents, using incentives might be advisable, but emphasizing salience is less effective.
-

Figure Captions

Figure 1. Effect of incentives on response rate for non-working respondents in comparison to the total group of respondents (Hypothesis 1).

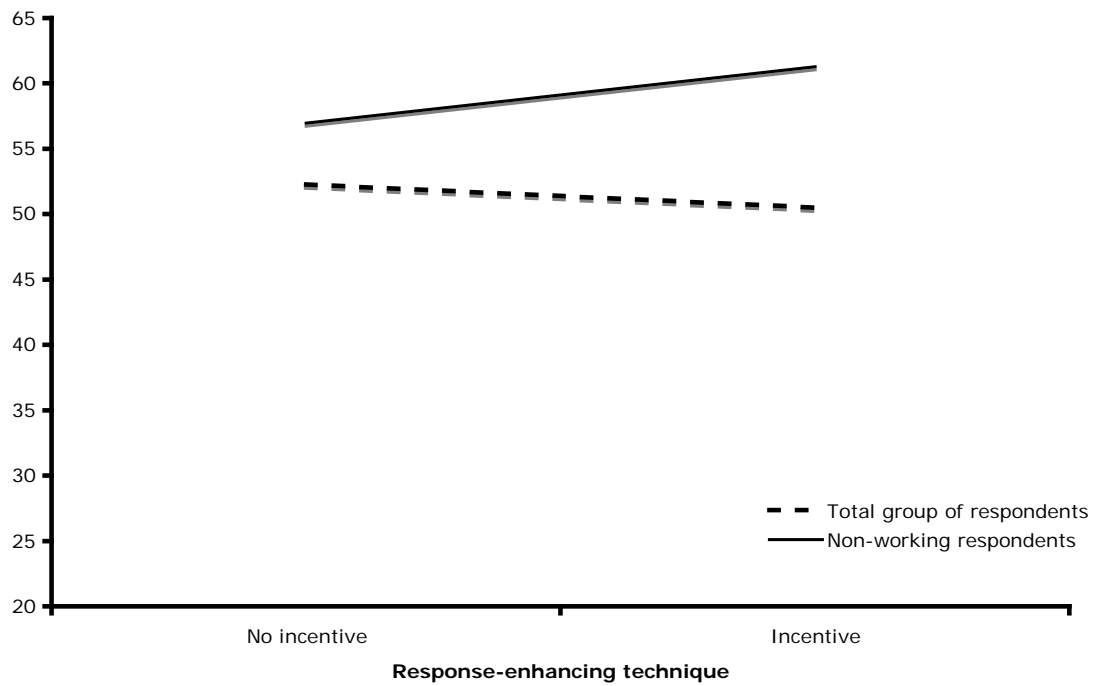


Figure 2. Effect of salience on response rate for non-working respondents in comparison to the total group of respondents (Hypothesis 2).

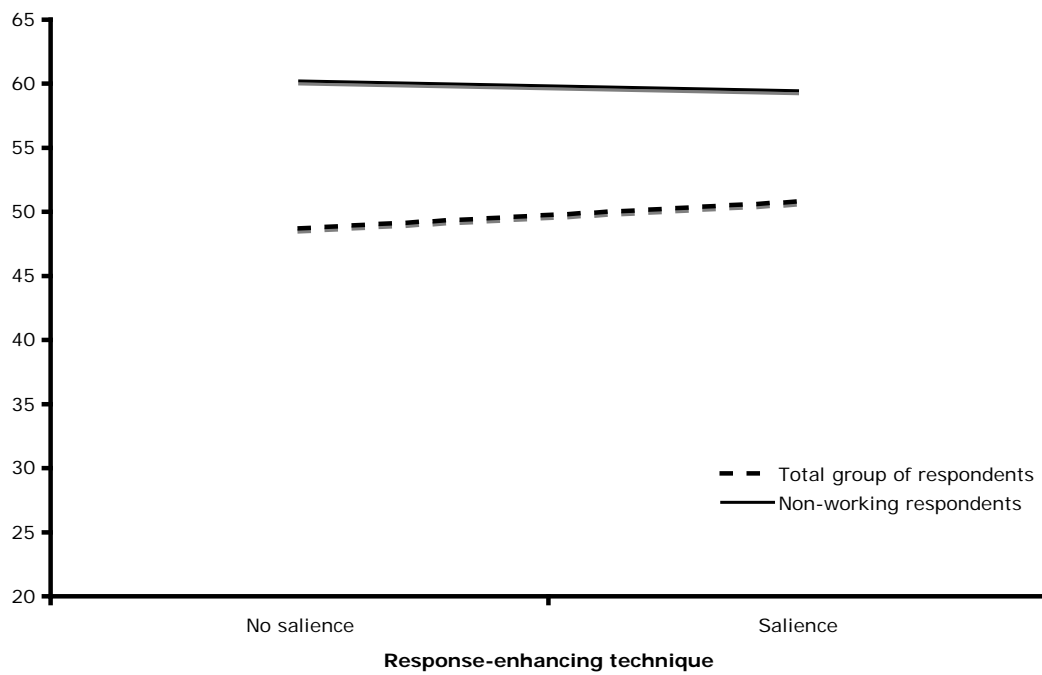


Figure 3. Effect of sponsorship on response rate for consumers in comparison to total group of respondents (Hypothesis 4).

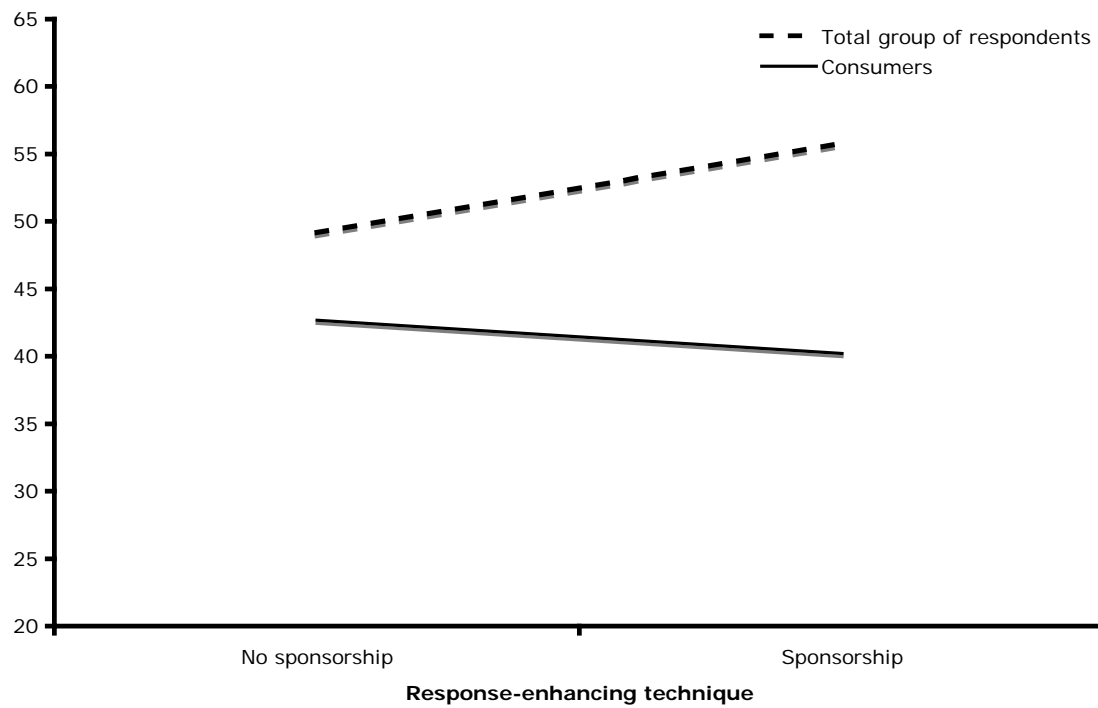


Figure 4. Effect of administration mode on response rate for non-managerial employees in comparison to the total group of respondents (Hypothesis 5).

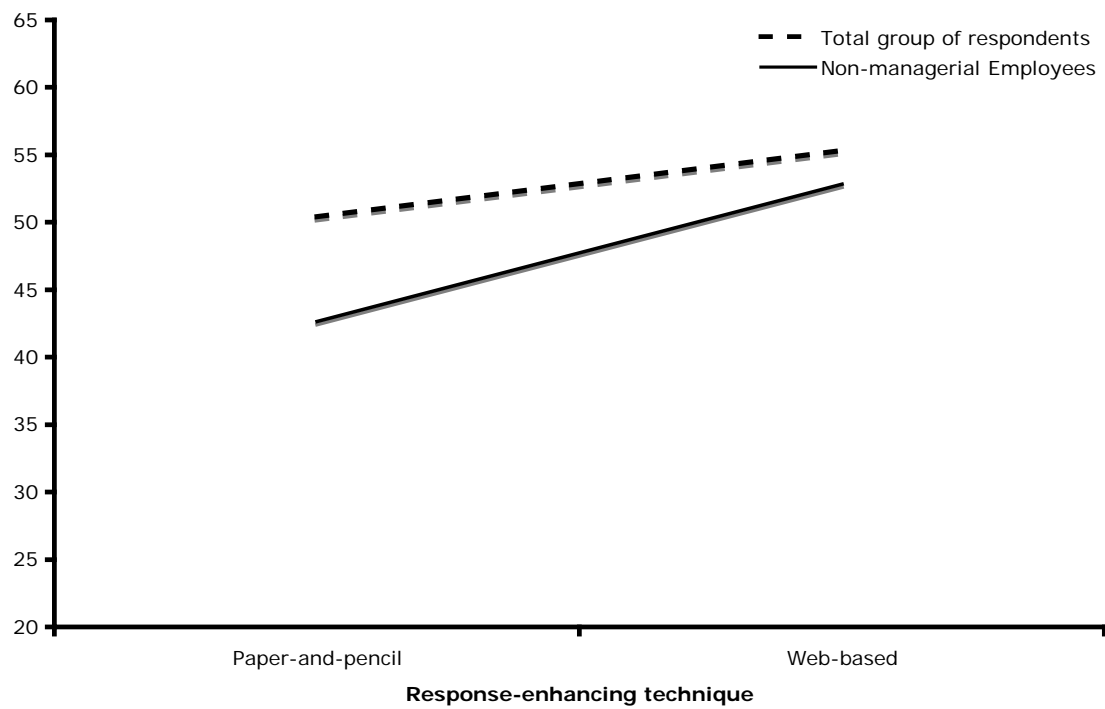


Figure 5. Effect of incentives on response rate for non-managerial employees in comparison to the total group of respondents (Hypothesis 6).

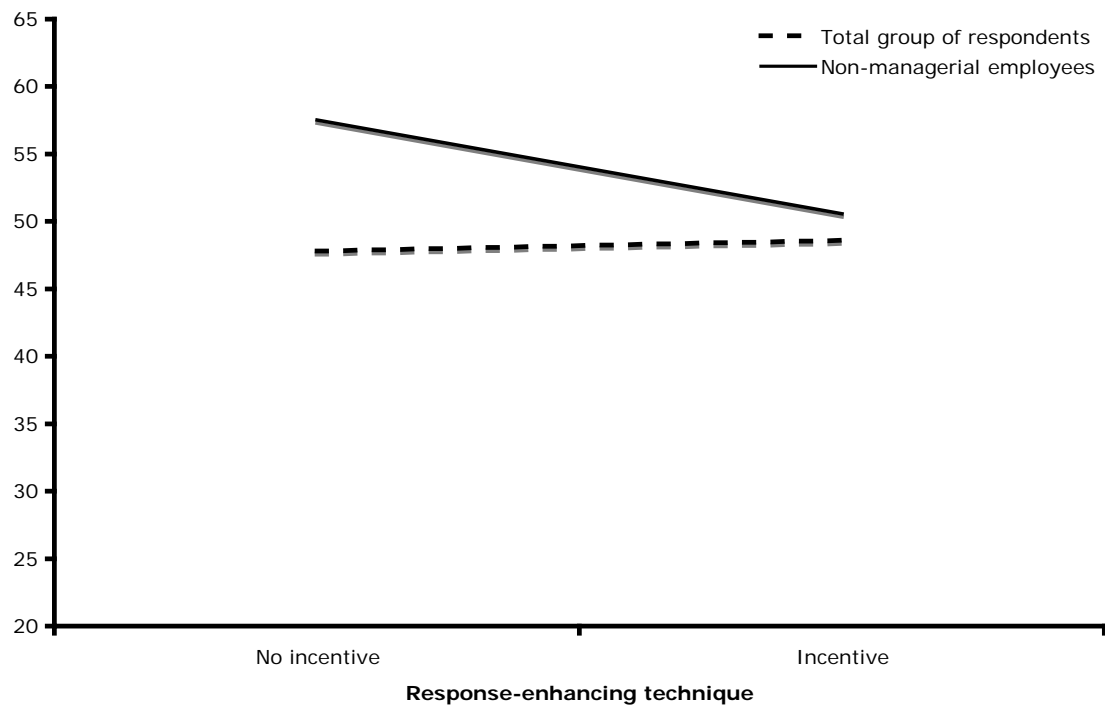


Figure 6. Effect of sponsorship on response rate for managerial employees in comparison to the total group of respondents (Hypothesis 7).

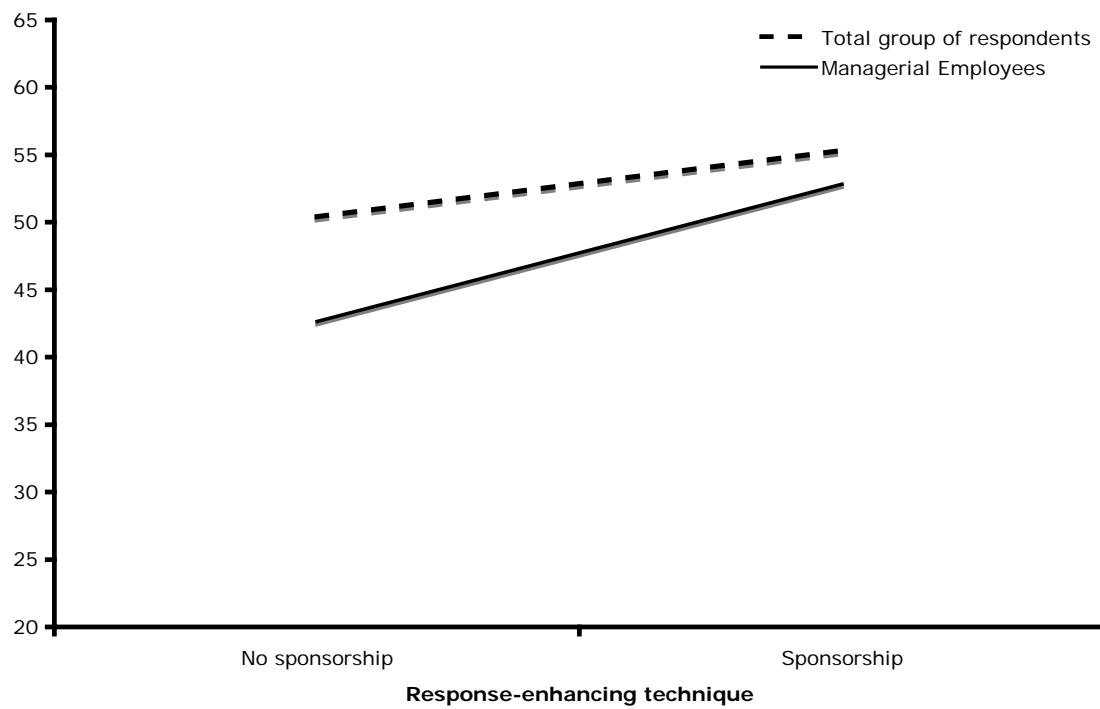


Figure 7. Effect of salience on response rate for top executives in comparison to the total group of respondents (Hypothesis 9).

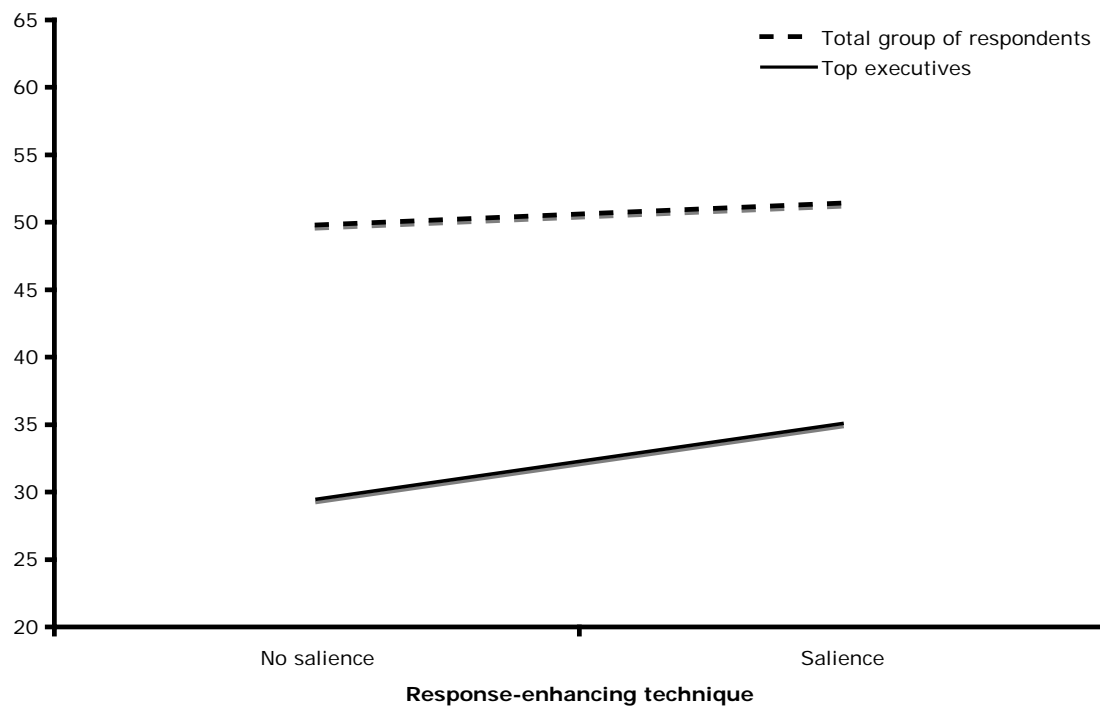


Figure 8. Effect of incentives on response rate for top executives in comparison to total group of respondents (Hypothesis 10).

